NLS-HR2180/HR2280

High Performance

Wireless Hand-held 1D/2D Barcode Scanner

User Guide

HR2180_2280_UM_EN_V1.1.14

Notice

Make sure you carefully read the following information to ensure that your barcode scanner is able to perform at the level for which it is designed.

1. All software, including firmware, furnished to the user is on a licensed basis.
2. The right is reserved to make changes to any software or product to improve reliability, function, or design.
3. The material in this manual is subject to change without notice.
4. The manufacturer assumes no responsibility for any loss or claims by third parties which may arise from the use of this manual.
5. A standard kit contains: a handheld unit, a cradle (with PS2, or USB, or RS-232 cable), an antenna, a 5V AC/DC adaptor (for battery charge) and a CD-ROM (containing software and electrical manuals). A 5V AC/DC adaptor for RS-232 cable is optional.
6. Do not throw or drop the scanner or otherwise subject it to strong impact, which can damage the scanner, interrupt program execution, corrupt memory contents, or otherwise interfere with proper operation.
7. Use a blunt object to operate the stroke keys. Use of a sharp pointed object can damage stroke keys and cause shorting of internal circuitry.
8. Never try to remove the battery from the scanner.
9. Sudden temperature changes can cause condensation to form on the scanner's case. Operating the scanner while condensation is present can interfere with proper operation. Take care to avoid conditions that cause the formation of condensation. If condensation does form, wait until it dries completely before using the scanner.

Safety precautions – Danger!

Be sure to read the following safety precautions carefully before trying to use the barcode scanner for the first time. Keep this manual in handy place for future reference.

Danger!

This symbol indicates information that, if ignored or applied incorrectly, creates the danger of death or serious personal injury.

Lithium-ion battery

- Never allow the battery to become wet. Water can create the danger of battery heat emission, explosion, and fire.
- Never use or leave the battery next to open flame, near a stove, or any other area exposed to high heat. Doing so creates the danger of battery heat emission, explosion, and fire.
- Never use the battery with any device other than this unit. Doing so can creates the danger of battery heat emission, explosion, and fire.
- Note that the battery's positive (+) and negative (-) terminals must be oriented correctly when it is loaded into the Barcode Scanner. Connecting the battery with its terminals reversed creates the danger of battery fluid leakage, heat emission, explosion, and fire.
- Never dispose of the battery by incinerating it or otherwise expose it to heat. Doing so creates the danger of battery heat emission, explosion, and fire.
- Never allow the positive (+) and negative (-) terminals of the battery to become connected (shorted) by metal. Doing so create the danger of battery heat emission, explosion, and fire.
- Never transport or store the battery together with a necklace, hair pins or other metal objects. Doing so can short battery terminals, and create the danger of battery heat emission, explosion and fire. Be sure to place the battery in its case whenever transporting or storing it.
- Never throw the battery or otherwise subject it to strong impact. Dong so creates the danger of battery heat emission, explosion, and fire.
- Never pierce the battery with nails, hit it with a hammer, or step on it. Doing so can create the danger of battery heat emission, explosion, and fire.
- Never try to take apart the battery in any way. Doing so creates the danger of battery heat emission, explosion, and fire.
- Use only the specified charger to charge the battery. Use of other types of charger creates the danger of battery heat emission explosion, and fire.

Warning!

This symbol indicates information that, if ignored or applied incorrectly, can create the possibility of death or serious personal injury.

Disassembly and modification

Never try to disassemble or modify the unit in any way. High voltage inside creates the danger of electrical shock.

Interior parts and components

Never touch interior high-voltage parts or components. Doing so creates the danger of electrical shock.

Abnormal conditions

Should the unit become hot or start to emit smoke or a strange odor, immediately turn off the power and contact your original dealer. Continued use creates the danger of fire and electrical shock.

Foreign objects

Should any foreign matter ever get into the unit, immediately turn off the power and contact your original dealer. Continued use creates the danger of fire and electrical shock.

Dropping and damage

Should you drop the unit and damage it, immediately turn off the power and contact your original dealer. Continue use creates the danger of fire and electrical shock.

Lithium-ion battery

- Do not put a battery in microwave ovens or pressure cookers. Doing so may cause the battery to overheat, explode or burst into flames.
- Do not use a battery that smells strange, is overheating, is a strange color, or is a strange shape. Doing so may cause the battery to overheat, explode or burst into flames.
- If the amount of time period the battery can serve becomes considerably short, stop using it. It may indicate the possibility of a malfunction in the battery. Continued charging the battery creates the danger of heat emission, explosion, and fire.
- Stop charging the battery after the recommended time even if it is not fully charged. Continuing to charge the battery may cause the battery to over heat, explode or burst into flames.
- If the battery leaks fluid or emits a strange smell, remove it from near heat or flames. Burning may cause the battery to explode or burst into flames.

Should fluid from the battery accidentally get into your eyes, do not rub them. Immediately rinse your eyes with clean water such as tap water and then consult a physician immediately.

Cradle with RS-232 cable and adaptor

- Power the cradle only with a power outlet whose voltage matches that marked on the adaptor specified in this manual.
- Avoid conditions that can cause damage or breaks in the power cord. Do not place heavy objects on the power cord. Keep it away from sources of heat. Any of these conditions can damage the power cord, creating the danger of fire and electrical shock.
- Never modify, sharply bend, twist, or pull on the power cord. Doing so creates the danger of fire and electrical shock.
- Use only the AC/DC adaptor and charger specified in this manual. Use of other AC/DC adaptor models or chargers creates the danger of fire and electrical shock.
- Should the power cord ever become severely damaged, contact your original dealer. Use of a damaged electrical cord creates the danger of fire and electrical shock.

Moisture

Keep the Basic Unit and the Barcode Scanner away from vases, planters, cups, glasses and other containers of liquid. Also keep it away from metal. Water and metal getting into the unit creates the danger of fire and electrical shock.

Caution!

This symbol indicates information that, if ignored or applied incorrectly, can create the possibility of personal injury or material damage.

Foreign objects

Take care to ensure that metal or combustible objects are not inserted into the openings of the unit. Such objects create the danger of fire and electrical shock.

Location

- Do not locate the unit on a surface that is unstable or uneven. Doing so creates the danger of the unit falling, which can cause personal injury.
- Do not locate the unit in an area subjected to large amounts of humidity or dust. Doing so creates the danger of fire and electrical shock.
- Do not leave the unit for long periods in a car parked in direct sunlight.

Heavy objects

Never place heavy objects on top of the unit. Doing so creates the risk of a loss of balance and the object falling, which can cause personal injury.

Exit window

- Never apply strong pressure to the mirror or subject it to strong impact. Doing so can crack the mirror and create the danger of personal injury.
- Should the mirror ever break, never touch the mirror broken. Doing so can cause personal injury.

Lithium-ion battery

- Never leave the battery in an area expose to direct sunlight, in a car parked in direct sunlight, or any other very hot area. Doing so creates the danger of heat emission and fire, as well as deterioration of battery performance and shortening of its service life.
- Do not use the battery in areas where static electricity is being generated. Doing so creates the danger of battery heat emission, explosion, and fire.
- Temperature ranges for battery use, charging and storage are specified below. Temperatures outside these ranges create the danger of deterioration of battery performance and shortening of its service life as well as fluid leakage and heat generation.
- Operating Temperature: -20℃ to 60℃.
- Charging Temperature: 0℃ to 45℃.
- Storage Temperature: -20℃ to 45℃.
- Should fluid from the battery accidentally get onto clothing or your skin, immediately rinse it off with clean tap water. Prolonged contact with battery fluid can cause skin irritation.
- Keep the battery out of the reach of small children. Do not let small children remove the battery from the charger or the unit it is powering.

Cradle with RS-232 cable and adaptor

- Keep the power cord away from stoves and other sources of extreme heat. Heat can melt the insulation of the power cord and create the danger of fire and electrical shock.
- Never pull on the power cord when unplugging it. Doing so can damage the cord and create the danger of personal injury, fire and electrical shock. Always hold onto the pug when unplugging it from the wall outlet.
- Never touch the plug while your hands are wet. Doing so can create the danger of electrical shock.
- Be sure to unplug the power cord from the wall outlet before moving the Basic Unit. Failure to do so can result in damage to the power cord caused by pulling it, which creates the danger of fire and electrical shock.
- Be sure to unplug the power cord from the wall outlet before cleaning the Basic Unit and charger.
- Be sure to turn the power off and unplug the power cord after use.
- Unplug the power cord from the wall outlet and clean the area around the plugs at least once a year. If dust collects on the AC/DC adaptor, humidity or moisture may cause a fault in the insulation, which may result in a fire.

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Technical specifications – handheld unit

Model	HR2180	HR2280
Dimensions	Length × Width × Depth: 17.0 × 7.0 × 8.3cm	
Weight	201 g	
Color	Gray	
Battery	1300 mAh Lithium-ion battery	
Charge time	Fully charged (>80%) in 3.5 hours	
Case material	ABS + PC	
Light source	LED(622 nm - 628 nm)	
Scanning angle	60°, 65°, 30° (Yaw, Pitch, Roll)	45°, 45°, 360° (Yaw, Pitch, Roll)
Precision	>5mil	>4mil
Decode capability	UPC-A, UPC-E, EAN-13, EAN-8, Code 39, Code 39 full ASCII, Interleaved 2 of 5,Codabar(NW7), Code 128, Code 93, GS1 Databar, UCC/EAN 128	UPC-A, UPC-E, EAN-13, EAN-8, Code 39, Code 39 full ASCII, Interleaved 2 of 5,Codabar(NW7), Code 128, Code 93, GS1 Databar, UCC/EAN 128, China Post, PDF417 , QR Code , Aztec , DataMatrix
Indicator	Visual, Audio	
Operating mode	Handheld	
Programming method	Manual (reading special barcode)	
Program upgrade	Using RSM software, while a cradle unit is required. Refer to RSM user manual.	
Operating temperature	0°C to 50°C (32°F to 120°F)	
Storage temperature	-40°C to 60°C (-40°F to 140°F)	
Humidity	5% to 95% (non-condensing)	
Drop specifications	Unit functions normally after repeated 1.2m (3.9 ft) drops to concrete	
Input voltage	4.75V – 6.5 VDC	
Operating current	12mA (standby); 90mA (scanning); 150mA (transmitting)	
Standby time	Over 7 days	
Read barcode per charge	Over 22,000 scans per charge	
Working range	Up to 200 meters[1] (open air)	
Radio link	430.5 ~ 432.0MHz , 433.05 ~ 434.79MHz with adaptive frequency hopping	

Note: [1] Test condition: temperature at 27°C, sunny day, visibility of 5 kilometers. Natural surroundings significantly affect the communication distance in practice. The distance drops quickly in the rainy, high-humidity, or heavy haze day; radio interference also shortens the communication distance.

Technical specifications – cradle and adaptor

Cradle

Input voltage	5 VDC ± 0.25V
Cable	Straight 2.0m (PS2) / Straight 1.5m (USB) / Straight 2.0m (RS-232)
Dimensions	Length × Width × Depth: 21.3 × 9.7 × 7.5cm
Weight	189g (without cable)
Indicator	Visual
Case material	ABS + PC
Programming method	Manual (reading special barcode)
Program upgrade	PC online using RSM software. Refer to RSM user manual
Operating temperature	0° to 50°C (32° to 120°F)
Storage temperature	-40° to 60°C (-40° to 140°F)
Humidity	5% to 95% (non-condensing)
Drop specifications	Unit functions normally after repeated 1.2m (3.9ft) drops to concrete
Program upgrade	Online

AC/DC adaptor

Input	100~240V AC, 0.3A, 50~60Hz
Output	+5V DC, 1~1.4A
Operating temperature	0° to 45°C (32° to 113°F)
Storage temperature	-40° to 60°C (-40° to 140°F)
Humidity	5% to 95% (non-condensing)

Default setting for each barcode

Code type	Read enable	Check digit verification	Check digit transmission	Min. code length	Proprietary code ID	AIM code ID
UPC-A	√	-	√	(12)[2]	A	]Em
UPC-E	√	-	√	(8)[2]	D	]Em
EAN-13	√	-	√	(13)[2]	A	]Em
EAN-8	√	-	√	(8)[2]	C	]Em
ISBN/ISSN[1]	-	-	-	-	-	-
Code 39	√	-	√	1	M	]Am
Interleaved 2 of 5	√	-	√	6	I	]Im
Industrial 2 of 5	-	-	-	4	H	]Im
Matrix 2 of 5	-	-	-	6	X	]Im
Codabar	√	-	-	4	N	]Fm
Code 128	√	-	-	1	K	]Cm
Code 93	√	-	-	1	L	]Gm
Code 11	-	-	-	4	V	-
MSI/Plessey	-	-	-	4	O	]Mm
UK/Plessey	-	-	-	1	U	]Mm
UCC/EAN 128	√	-	-	1	K	]Cm
China Post	√	-	-	(11)[2]	T	]Im
China Finance	-	-	-	(10)[2]	Y	-
GS1 DataBar	-	-	-	(16)[2]	R	]em
GS1 DataBar [3]	-	-	-	(16)[2]	R	]em
GS1 DataBar Limited	-	-	-	(16)[2]	R	]em
GS1 DataBar Expanded	-	-	-	1	R	]em
PDF417*	√	-	-	1	P	]Lm
QR Code*	√	-	-	1	E	]Qm
Aztec*	√	-	-	1	F	]zm
DataMatrix*	√	-	-	1	W	]dm
HanXin Code*	√	-	-	1	J	-

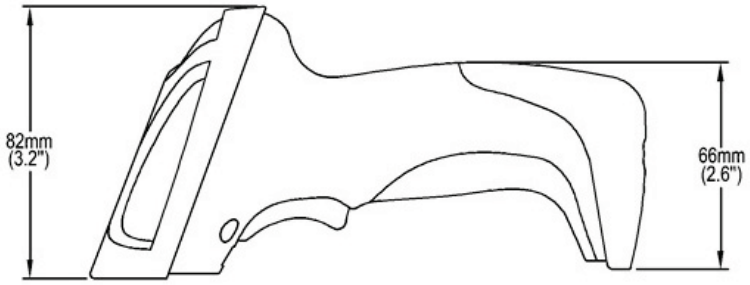
Note: [1]The settings for ISBN/ISSN and EAN-13 must be the same.

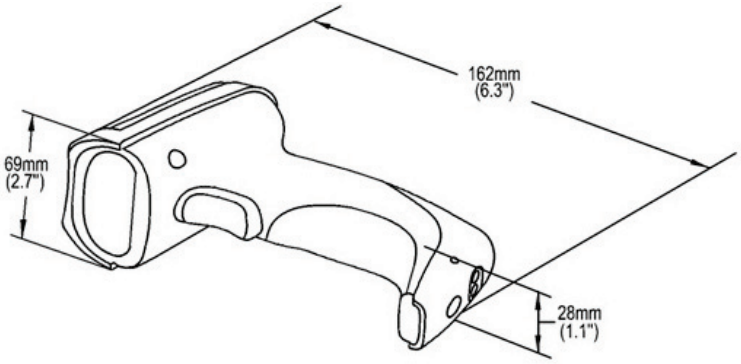
[2] Fixed-length barcodes.

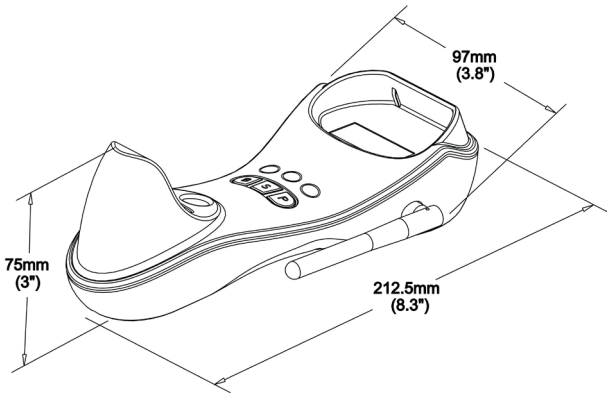
[3]The settings for GS1 DataBar Truncated and GS1 DataBar must be the same.

*These settings only apply to the HR2280 model.

Dimensions


82mm
(3.2")
66mm
(2.6")


162mm
(6.3")
69mm
(2.7")
28mm
(1.1")


97mm
(3.8")
75mm
(3")
212.5mm
(8.3")

Parts of the scanner

Handheld unit

① Exit window

② Trigger

③ Red LED (Charging indicator)

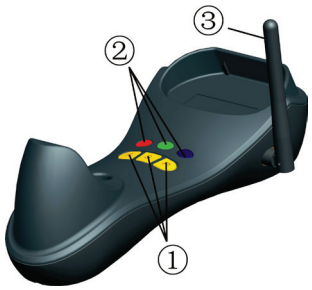
④ Communication/Charge socket

⑤ Power button ⏻

⑥ Sound hole

⑦ Red LED (Not successful transmission); Blue LED (Power); Green LED (Setting)

Cradle



① B button (Reserved); S button (Upgrade / Reset); P button (USB Emulate)

② Red LED (Initiation failure); Blue LED (Power); Green LED (Data in/Radio frequency hopping indicator)

③ Antenna

Power on, power off handheld unit and charge battery

Power on handheld unit:

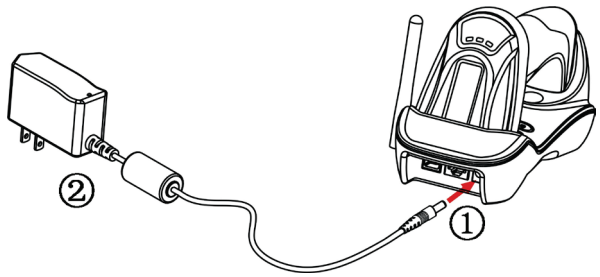
Press the power button ⏻ (see Parts of the scanner) for two seconds.

Power off handheld unit:

Press the power button ⏻ (see Parts of the scanner) for two seconds.

Charge battery:

1. Please charge the battery before the first time of use. The charge indicator (red LED) on the handheld unit is turned on when the charging is in process. When the charging process completes, the red LED is turned off.
2. Charging time: 8 hours for fully charged.

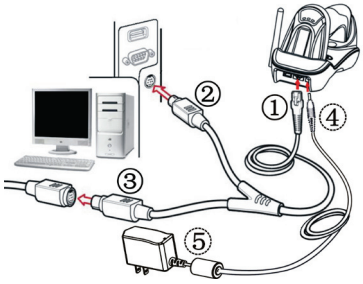


Installation of cradle

Note: If any of the below operation is incorrect, turn off the power immediately and check the scanner for any improper connections. Go through all steps again.

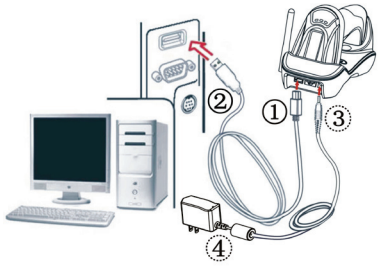
With PS2 cable

1. Plug one end of the PS2 cable to the cradle, one end to PS2 port on PC, and one end to the keyboard.
2. Plug the output of the AC/DC adaptor into the power terminal of on the cradle. Plug the AC/DC adaptor provided by the manufacturer into an electrical outlet.



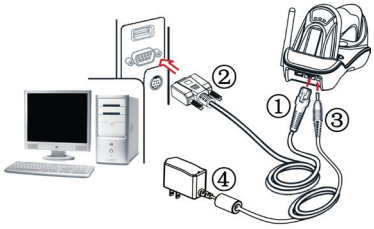
With USB cable

1. Plug one end of the USB cable to the cradle. Plug the other end into the USB port of the computer.
2. Plug the output of the AC/DC adaptor into the power terminal of on the cradle. Plug the AC/DC adaptor provided by the manufacturer into an electrical outlet.
3. Windows gives message on “new hardware found – USB HID input device found”, then driver will be installed on request.
4. After successfully installing the new hardware, message will be given: “hardware installed successfully and ready to use”.
5. If any problem encounters during the installation process, please unplug the USB cable from the computer and repeat step 1-3.



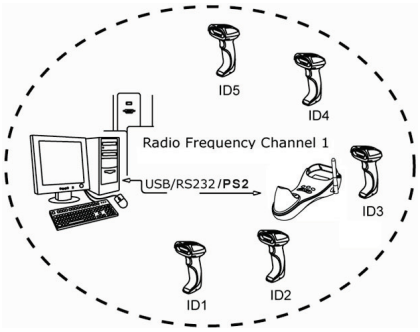
With RS-232 cable

1. Connect the DB9 serial communication cable with the cradle and the COM port of the computer.
2. Plug the output of the AC/DC adaptor into the power terminal of on the cradle. Plug the AC/DC adaptor provided by the manufacturer into an electrical outlet.

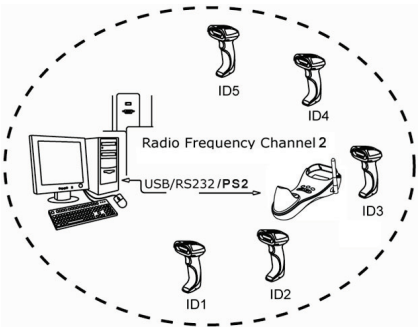


RF communication as clusters

The scanner utilize 430.5 ~ 432.0MHz, 433.05 ~ 434.79MHz RF wireless communication with LR-433-WPAN wireless communication protocol. LR-433-WPAN protocol first time introduces adaptive frequency hopping technique. With this new protocol, cordless scanner is able to pick up a higher-performance RF channel from a group of channels in terms of consolidated communication. LR-433-WPAN protocol supports up to 128 handheld units (16 handheld-units/base-unit x 8 base-units = 128) within the same effective communication range. A circle of response time for one cradle with 16 handheld units is 1 second, while the response time for one cradle with one handheld unit is less than 0.1 second.



cluster 1



cluster 2

Scanning

When the scanner is scanning programming codes in this manual, ensure the scan line crosses the symbol as illustrated below to prevent scanning other (nearby) codes in its area.

HR2180:

RIGHT

WRONG

HR2280:

RIGHT

WRONG

Refer to the next page, the steps of programming are:

1. Scan the **SETUP** bar code on the parameter setting part.
2. Enter the option mode by scanning the **Option bar code**.
3. To the right of the option barcode, the necessary alphanumeric inputs are listed. Scan these alphanumeric entries from the **back foldout** page.
4. Scan the **END** bar code, listed on the lower right hand corner of each parameter setting part.
5. **Notes that only one parameter can be setup at each time.**
6. During the process of programming, LED is lighting to indicate the programming correctness. LED will go off if any incorrect programming operation performed.
7. After each successful programming, LED will go off and the scanner will beep twice.
8. Throughout the programming bar code menus, **the factory default settings are indicated with asterisks (*).**

Example: to set Flow control to be XON/XOFF.

Steps: Scan the following barcodes in order.

Keyboard wedge for Cradle

Keyboard type: As a keyboard interface, the scanner supports most of the popular PCs and IBM terminals.

Keyboard layout: The scanner supports different national keyboard layouts.

Clock period: According to the PS2 protocol, the clock is provided by the device, e.g. keyboard or scanner, with the period between 60us to 100us.

Delay-after-compound-key: In some rare occasions, machine with low speed PS2 communication port would require a free time gap following the press/release of the compound key (Shift, Ctrl or Alt).

Numeric key:

Alphabetic key- the scanner will output code result as alphabetic key.

Numeric key- the scanner will output code result as pressing numeric keypad ('0', '1', '2', '3', '4', '5', '6', '7', '8', '9', '.', '+', '-', '/', '*' only).

Alt+ keypad- the scanner will output code result as pressing Alt+ numeric key (on keypad). Note that the Num Lock control key must be ON. This setting can be specially adapted for use with different national keyboard layout.

Power-on simulation: All of the PCs check the keyboard status during power-on self test. It simulates keyboard timing and passes keyboard present status to the PC during power-on.

Inter-character delay: This delay is inserted after each data character transmitted.

Inter-byte delay: This delay is inserted after each byte transmitted. Normally a character is comprised of three or above bytes.

Block trans. delay: It is a delay timer between barcode data output. This feature is used to transfer continually with shorter barcode data.

Caps Lock status: By selecting *Caps Lock "ON"* or *Caps Lock "OFF"*, the scanner will output data string based on the information on the Caps Lock status.

Caps Lock override: If this function is enabled, on AT or AT notebook hosts, the keyboard ignores the state of the Caps Lock key. Therefore, an 'A' in the bar code is sent as an 'A' no matter what the state of the keyboard's Caps Lock key.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Keyboard type 0201	IBM AT, PS/2	00*
	Apple Mac compatibles	01
	Reserved	02

Keyboard layout 0202	USA	00*
	Turkish F	01
	Turkish Q	02
	French	03
	Italian	04
	Spanish	05
	Slovak	06
Clock period 0203	60us	00
	70us	01
	80us	02*
	90us	03
	100us	04
	200us	05
Delay-after-compound-key 0204	0ms	00*
	10ms	01
	20ms	02
	40ms	03
	80ms	04
Numeric key 0205	Alphabetic key	00*
	Numeric keypad	01
	Alt+ keypad	02
Power-on simulation 0206	Disable	00*
	Enable	01
Inter-character delay 0207	0ms	00*
	5ms	01
	10ms	02
	20ms	03
	40ms	04
	80ms	05
Inter-byte delay 0208	1ms	00*
	2ms	01
	4ms	02
	8ms	03
Caps Lock status 0209	OFF	00*
	ON	01
Caps Lock override 0210	Disable	00*
	Enable	01
Reserved 0211		

%%%END END

Flow control:

None-The communication only uses TxD and RxD signals without any hardware or software handshaking protocol.

RTS/CTS-If the scanner wants to send the barcode data to host computer, it will issue the RTS signal first, wait for the CTS signal from the host computer, and then perform the normal data communication. If there is no replied CTS signal from the host computer after the timeout duration, the scanner will issue an error indication. By setting (Host idle: Low RTS) or (Host idle: High RTS), the scanner can be set to match the Serial Host RTS line.

XON/XOFF-An XOFF character turns the scanner transmission off until the scanner receives an XON character.

ACK/NAK-After transmitting data, the scanner expects either an ACK (acknowledge) or NAK (not acknowledge) response from the host. When a NAK is received, the scanner transmits the same data again and waits for either an ACK or NAK. After three unsuccessful attempts to send data when NAKs are received, the scanner issues an error indication and discards the data.

Inter-character delay: Refer to Inter-character delay of Keyboard wedge.

Response delay: This delay is used for serial communication of the scanner when it waits for a handshaking acknowledgment from the host.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Flow control 0301	None	00*
	RTS/CTS (Host idle: Low RTS)	01
	RTS/CTS (Host idle: High RTS)	02
	XON/XOFF	03
	ACK/NAK	04
Inter-character delay 0302	0ms	00*
	5ms	01
	10ms	02
	20ms	03
	40ms	04
	80ms	05
Reserved 0303		
Response delay 0304	00-99 (100ms)	00-99
		00*
Baud rate 0305	300	00
	600	01
	1200	02
	2400	03
	4800	04
	9600	05*
	19200	06
	38400	07
	57600	08
	115200	09
Parity 0306	None	00*
	Odd	01
	Even	02
Data bit 0307	8 bits	00*
	7 bits	01
Stop bit 0308	One bit	00*
	Two bits	01

%%%%END END

USB interface for Cradle

USB device type: When the cradle is connected to a PC with a USB cable, it will be identified as a HID keyboard.

Keyboard layout: Refer to Keyboard layout of Keyboard wedge for Cradle.

Host comm. port speed: Refer to Host comm. port speed of Keyboard wedge for Cradle.

Numeric key: Refer to Numeric key of Keyboard wedge for Cradle.

%SETUP SETUP

Option bar code	Option	Alpha. entry
USB device type 0901	HID keyboard	00*
	HID keyboard for Apple	01
	USB virtual COM	02
Keyboard layout 0902	USA	00*
	Turkish F	01
	Turkish Q	02
	French	03
	Italian	04
	Spanish	05
	Slovakian	06
Host comm. port speed 0903	0-8 (0: highest; 8: lowest)	00-08 02*
Numeric key 0904	Alphabetic key	00*
	Numeric keypad	01
	Alt+ keypad	02

%%%END END

Scanning mode:

Good-read off-The trigger button must be pressed once to activate scanning. The light source of scanner stops scanning when there is a successful reading or no code is decoded after the Stand-by duration elapsed.

Momentary-The trigger button acts as a switch. Press button to activate scanning and release button to stop scanning. The light source of scanner stops scanning when there is a successful reading or no code is decoded after the Stand-by duration elapsed.

Alternate-The trigger button acts as a toggle switch. Press button to activate or stop scanning.

Continue-The scanner always keeps scanning, and it does not matter when the trigger button is pressed or duration is elapsed.

Timeout off-The trigger button must be pressed once to activate scanning. The light source of scanner stops scanning when no code is successful decoded after the Stand-by duration elapsed.

Same barcode delay time: If a barcode has been scanned and output once successfully, the laser beam must be off or moved away from the barcode beyond delay time to active scanning the same barcode. When this feature is set to be “0xFF”, then the delay time is indefinite.

Double confirm: If it is enabled, the scanner will require a several times of same-decoded-data to confirm a valid reading.

Global Max./Min. code length: These two lengths are defined as the valid range of decoded barcode data length. Make sure that the minimum length setting is no greater than the maximum length setting, or otherwise the labels of the symbology will not be readable. In particular, the same value can be set for both minimum and maximum reading length to force the fixed length barcode decoded.

Notes:

1. Please set the max./min. length for individual barcode in later sections, if special demand is requested.
2. The number of check digits is included in max./min. code length.
3. These two settings have no effect on the symbologies with fixed-length, e.g. UPC-A, UPC-E, EAN-13, EAN-8 and China Post.

Global G1-G6 string selection: The scanner offer one or two string group for ALL symbologies. By setting one or two digits to indicate which string group you want to apply. You may refer to the chapters of “String setting” and “String position & Number of truncated leading/ending character”.

Example: Group 1 → set 01 or 10. Group 2 and 4 → set 24 or 42.

All valid settings include 00, 01, 02, 03, 04, 05, 06, 10, 11, 12, 13, 14, 15, 16, 20, 21, 22, 23, 24, 25, 26, 30, 31, 32, 33, 34, 35, 36, 40, 41, 42, 43, 44, 45, 46, 50, 51, 52, 53, 54, 55, 56, 60, 61, 62, 63, 64, 65 and 66.

Element amendment: If it is enabled, the scanner can read the barcode comprised with bars and spaces in different scale.

Printable character only: If it is enabled, the scanner will output the printable characters only, i.e. in ASCII from 20H to 7EH.

Decoder optimization: If it is enabled, the scanner will optimize the decoder with error correction. This function is not effective for all types of barcodes.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Scanning mode 0401	Good-read off Momentary Alternate Continue Timeout off	00 01* 02 03 04
Standby duration 0402	01-99 (second)	01-99 04*
Same barcode delay time 0403	00-FF_{16} (50ms)	00-FF_{16} 08*
Double confirm 0404	00-09 (00: no)	00-09 00*
Global max. code length 0405	04-99	04-99 99*
Global min. code length 0406	01-99	01-99 04*
Global G1-G6 string selection 0407	00-66	00-66 00*
Element amendment 0408	Disable Enable	00 01*
Printable character only 0409	Disable Enable	00* 01
Decoder optimization 0410	Disable Enable	00 01*
Reserved 0411		

%%%END END

Visual and audio indication for Handheld unit

Power on alert: After power-on the scanner will generate an alert signal to indicate a successful self-test.

LED indication: After each successful reading, the LED above the scanner will light up to indicate a good barcode reading.

Beeper indication: After each successful reading, the scanner will beep to indicate a good barcode reading, and its beep tone duration is adjustable.

Beep tone duration: This parameter can be adjusted for a good reading upon favorite usage.

Example:

Visual and audio indication of handheld unit for RF transmission

Successful Transmission	Audio (Beeper)	Red LED on handheld unit
Yes	None	Off
No	Three beeps	On

SETUP

Option bar code	Option	Alpha. entry
Power on alert	Disable Enable	00 01*
LED indication	Disable Enable	00 01*
Beeper indication	Disable Enable	00 01*
Beep tone duration	01-09 (10ms)	01-09 05*

END

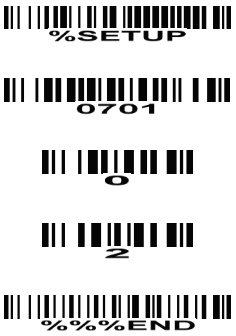
RF 433MHz communication setting for Handheld unit

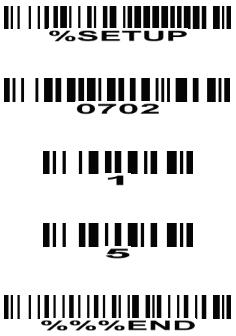
Handheld unit RF channel No.: The scanner offers eight different radio frequency channels for the data transmission between handheld unit and cradle.

Handheld unit ID: The scanner offers 16 different handheld unit IDs.

Example: to set a handheld unit to work on channel 2 with ID 15.

Steps: Scan the following barcodes in order.





RF power level: By selecting, you can change the radio frequency power level for handheld unit.

Frequency hopping: If it is enabled, the scanner is able to pick up a higher-performance radio frequency channel from a group of channels in terms of consolidated communication.

RF operating mode:

Normal- Do not batch data. The handheld unit attempts to transmit every scanned barcode. If the transmission is failed, the barcode data is ignored.

Out-of-range batch - The handheld unit starts storing barcode data when it loses its connection to a remote device (for example, when a user holding the handheld unit walks out of range). Data transmission is triggered by reestablishing the connection with the base (for example, when a user holding the handheld unit walks back into range).

Standard batch- The handheld unit starts storing barcode data after "%%%EBM" (*Enter Batch Mode*) is scanned. Data transmission is triggered by scanning "%%%SBD" (*Send Batch Data*).

In Out-of-range batch or Standard batch modes, calculate the number of barcodes the handheld unit can store as follows:

Number of storable barcodes = 16,384 bytes of memory / (number of characters in the barcode + 2).

Beep on reconnect attempt: This feature is active only when the Out-of-range batch operating mode is selected. If this feature is enabled, the beeper emits 4 short beeps every 5 seconds while the reconnection attempt is in progress.

Radio connection checking interval: This feature is active only when the Out-of-range batch operating mode is selected. The handheld unit checks the radio communication with the base once within the time interval.

Save data at low-battery or power-off: If it is enabled, the handheld unit will save data to memory while the battery is low or before the power is off.

Low battery indicator: If it is enabled, while the power is low, the power LED on the handheld unit flashes 5 times, and the beeper emits 5 beepers for every 10 minutes or 200 scans. In this battery low status, the power LED flashes 2 times by pulling the scanner trigger.

Enter sleeping mode interval: If it is enabled, the handheld unit will enter sleeping mode while no operation beyond the time interval defined; the handheld unit will return to normal mode by pulling the scanner trigger.

%SETUP SETUP

Option barcode	Option	Alpha. entry
Handheld unit RF channel No. 0701	01-08	01-08 06*
Handheld unit ID 0702	01-16	01-16 01*
RF power level 0703	10dbm 7dbm 5dbm 0dbm -5dbm -10dbm -15dbm	01* 02 03 04 05 06 07
Frequency hopping 0704	Disable Enable	00 01*
RF operating mode 0705	Normal Out-of-range batch Standard batch	00* 01 02
Beep on reconnect attempt 0706	Disable Enable	00* 01
Radio connection checking interval 0707	00-ffH (second)	00-ffH 03*
Save data at low-battery or power-off 0708	Disable Enable	00* 01
Low battery indicator 0709	Disable Enable	00 01*
Enter sleeping mode interval 0710	00-ffH (minute)	00-ffH 0F*

%%%END END

Enter batch mode

%%%EBM

Send batch data

%%%SBD

Show channel information of handheld unit

%%%SCI

RF 433MHz communication setting for Cradle

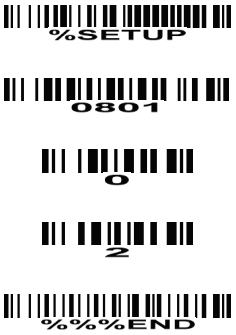
Cradle RF channel No.: The scanner offers eight different radio frequency channels for the data transmission between handheld unit and cradle.

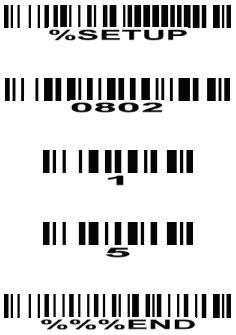
Bind the first handheld unit ID: This setting is used to bind the first handheld unit ID. By this setting, the cradle communicates with ONLY one handheld unit with the binding ID. 16 different handheld unit IDs are offered.

Join a next first handheld unit ID: This setting is used to associate one more handheld unit ID with the cradle. 16 different handheld unit IDs are offered.

Example 1: to set a cradle to work on channel 2, and to bind the first handheld unit ID as 15.

Steps: Scan the following barcodes in order.

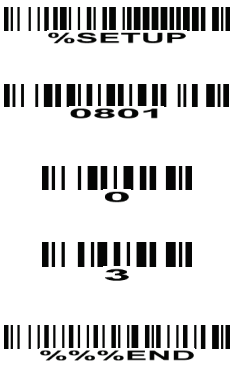


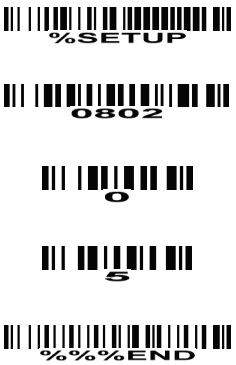


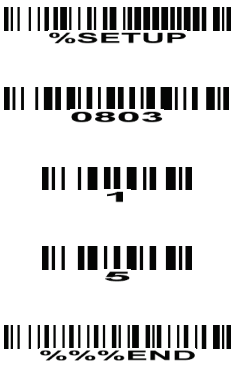
Example 2: to set a cradle to work on channel 3, and communicate with the handheld units with ID 5 and 15. The first step is to bind the first handheld unit ID as 5, then join a next handheld unit ID as 15.

Steps:

1. Keep pressing the S button on the cradle, until the blue LED is flashing. Then three LEDs will all be turned ON, this indicates the cradle being upgrade ready mode.
2. Scan the following barcodes in order.







RF power level: Refer to RF power level of RF 433MHz communications for Handheld unit.

Frequency hopping: Refer to Frequency hopping of RF 433MHz communications for Handheld unit.

%SETUP SETUP

Option barcode	Option	Alpha. entry
Cradle RF channel No. [i] 0801	01-08	01-08 06*
Bind the first handheld unit ID[i] 0802	01-16	01-16 01*
Join a next handheld unit ID[i] 0803	01-16	01-16 01*
RF power level 0804	10dbm 7dbm 5dbm 0dbm -5dbm -10dbm -15dbm	01* 02 03 04 05 06 07
Frequency hopping 0805	Disable Enable	00 01*

%%%END END

Show channel information of Cradle[i]

%%BSCI

Note: The settings indicated with (i) are valid only when the cradle is in upgrade ready mode.

Cradle entering upgrade ready mode

Keep pressing the S button on the cradle, until the blue LED is flashing. Then three LEDs will all be turned ON, this indicates the cradle being upgrade ready mode.

UPC-A

Read: Format

Leading zero	Data digits (11 digits)	Check digit

Check digit verification: The check digit is optional.

Check digit trans.: By setting Enable, check digit will be transmitted.

Code ID setting: Code ID is a one-or-two-character string used to represent the symbol upon a succeeding reading. If you want application to transmit Code ID, you must set Code ID transmission to be enabled. Refer to the chapter of String transmission.

Insertion group selection: Refer to Global insertion group selection of the chapter of Hand-held scan & some global settings.

Supplement digits: The Supplement digits barcode is the supplemental 2 or 5 characters.

Format

Leading zero	Data digits (11 digits)	Check digit	Supplement digits 2 or 5

Truncation/Expansion:

Truncate leading zeros- The leading "0" digits of UPC-A data characters can be truncated when the feature is enabled.

Expand to EAN-13- It extends to 13-digits with a "0" leading digit when the feature is enabled.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 1101	Disable Enable	00 01*
Check digit verification 1102	Disable Enable	00 01*
Check digit trans. 1103	Disable Enable	00 01*
Code ID setting 1104	00-FF_{16} (ASCII)	00-FF_{16} <A>*
Insert group selection 1105	00-66	00-66 00*
Supplement digits 1106	None 2 digits 5 digits 2 or 5 digits	00* 01 02 03
Truncation/Expansion 1107	None Truncate leading zeros Expand to EAN-13	00* 01 02
Reserved 1108		

%%%END END

UPC-E

Read: Format

Leading zero	Data digits (6 digits)	Check digits

Check digit verification: The check digit is optional and made as the sum of the numerical value of the data digits.

Check digit trans.: By setting Enable, check digit will be transmitted.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

Supplement digits:

Format

Leading zero	Data digits (6 digits)	Check digit	Supplement digits 2 or 5

Truncation/Expansion:

Truncate leading zeros- Refer to Truncation/Expansion of UPC-A.

Expand to EAN-13- It extends to 13-digits with “0” digits when the feature is set to be enabled.

Example: Barcode “0123654”,

Output: “0012360000057”.

Expand to UPC-A- It extends to 12-digits when the feature is set to be enabled.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 1201	Disable Enable	00 01*
Check digit verification 1202	Disable Enable	00 01*
Check digit trans. 1203	Disable Enable	00 01*
Code ID setting 1204	00-FF_{16} (ASCII)	00-FF_{16} <D>*
Insert group selection 1205	00-66	00-66 00*
Supplement digits 1206	None 2 digits 5 digits 2 or 5 digits	00* 01 02 03
Truncation/Expansion 1207	None Truncate leading zeros Expand to EAN-13 Expand to UPC-A	00* 01 02 03
Reserved 1208		

%%%END END

EAN-13

Read:

Format

Data digits (12 digits)	Check digit

Check digit verification: The check digit is optional and made as the sum of the numerical value of the data digits.

Check digit transmission: By setting Enable, check digit will be transmitted.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

Supplement digits:

Format

Data digits (12 digits)	Check digit	Supplement digits 2 or 5

ISBN/ISSN: The ISBN (International Standard Book Number) and ISSN (International Standard Serial Number) are two kinds of barcode for books and magazines. The ISBN is 10 digits with leading “978” and the ISSN is 8 digits with leading “977” of the EAN-13 symbology.

Example:

Barcode “9780194315104”, Output: “019431510X”.

Barcode “9771005180004”, Output: “10051805”.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 1301	Disable Enable	00 01*
Check digit verification 1302	Disable Enable	00 01*
Check digit transmission 1303	Disable Enable	00 01*
Code ID setting 1304	00-FF_{16} (ASCII)	00-FF_{16} <A>*
Insert group selection 1305	00-66	00-66 00*
Supplement digits 1306	None 2 digits 5 digits 2 or 5 digits	00* 01 02 03
ISBN/ISSN conversion 1307	Disable Enable	00* 01
Reserved 1308		

%%%END END

EAN-8

Read:

Format

Data digits (7 digits)	Check digit

Check digit verification: The check digit is optional and made as the sum of the numerical value of the data digits.

Check digit trans.: By setting Enable, check digit will be transmitted.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

Supplement digits:

Format

Data digits (7 digits)	Check digit	Supplement Digits 2 or 5

Truncation/Expansion: Refer to Truncation/Expansion of UPC-A.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 1401	Disable Enable	00 01*
Check digit verification 1402	Disable Enable	00 01*
Check digit trans. 1403	Disable Enable	00 01*
Code ID setting 1404	00-FF$_{16}$ (ASCII)	00-FF$_{16}$ <A>*
Insert group selection 1405	00-66	00-66 00*
Supplement digits 1406	None 2 digits 5 digits 2 or 5 digits	00* 01 02 03
Truncation/Expansion 1407	None Truncate leading zero Expand to EAN-13	00* 01 02
Reserved 1408		

%%%END END

Code 39

Read:

Format

★	Data digits (variable)	Check digit (optional)	★

Check digit verification: The check digit is optional and made as the sum module 43 of the numerical value of the data digits.

Check digit transmission: By setting Enable, check digit will be transmitted.

Max./Min. code length: Each symbology has own max./min. code length. If both setting of max./min. code length are "00"s, the setting of global max./min. code length is effective. The length is defined as to the actual barcode data length to be sent. Label with length exceeds these limits will be rejected. Make sure that the minimum length setting is no greater than the maximum length setting, or otherwise all the labels of the symbology will not be readable. In particular, you can see the same value for both minimum and maximum reading length to force the fixed length barcode decoded.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

Start/End transmission: The start and end characters of Code 39 are "★"s. You can transmit all data digits including two "★"s.

"★" as data character: By setting Enable, "★" can be recognized as data character.

Convert Code 39 to Code 32: Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Note that Code 39 must be enabled in order for this parameter to function.

Format of Code 32

"A" (optional)	Data digits (8 digits)	Check digit

Code 32 Prefix "A" transmission: By setting Enable, the prefix character "A" can be added to all Code 32 barcodes.

Trioptic Code 39 read: Trioptic Code 39 is a variant of Code 39 used in the marking of magnetic tapes and computer cartridges. Trioptic Code 39 symbols always contain six characters.

Format

$	Data digits (6 digits)	$

Trioptic Code 39 Start/End transmission: The start and end characters of Trioptic Code 39 are "$"s. You can transmit all data digits including two "$"s.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 1501	Disable Enable	00 01*
Check digit verification 1502	Disable Enable	00* 01
Check digit transmission 1503	Disable Enable	00* 01
Max. code length 1504	00-99	00-99 00*
Min. code length 1505	00-99	00-99 01*
Code ID setting 1506	$00\text{-}FF_{16}$ (ASCII)	$00\text{-}FF_{16}$ <M>*
Insert group selection 1507	00-66	00-66 00*
Format 1508	Standard Full ASCII	00* 01
Start/End transmission 1509	Disable Enable	00* 01
“★” as data character 1510	Disable Enable	00* 01
Convert Code 39 to Code 32 1511	Disable Enable	00* 01
Code 32 Prefix “A” transmission 1512	Disable Enable	00* 01
Trioptic Code 39 read 1513	Disable Enable	00 01*
Trioptic Code 39 Start/End transmission 1514	Disable Enable	00* 01

%%%END END

Interleaved 2 of 5

Read:

Format

Data digits (Variable)	Check digit (optional)

Check digit verification: The check digit is made as the sum module 10 of the numerical values of all data digits. There are two optional check digit algorithms: the specified Uniform Symbology Specification (USS) and the Optical Product Code Council (OPCC).

Check digit transmission: By setting Enable, check digit will be transmitted.

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

SETUP

Option bar code	Option	Alpha. entry
Read	Disable Enable	00 01*
Check digit verification	Disable USS OPCC	00* 01 02
Check digit transmission	Disable Enable	00* 01
Max. code length	00-99	00-99 00*
Min. code length	00-99	00-99 06*
Code ID setting	00-FF_{16} (ASCII)	00-FF_{16} <I>*
Insert group selection	00-66	00-66 00*
Reserved		

END

Industrial 2 of 5

Read:

Format

Data digits (variable)	Check digit (optional)

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

SETUP

Option bar code	Option	Alpha. entry
Read	Disable Enable	00 01*
Max. code length	00-99	00-99 00*
Min. code length	00-99	00-99 00*
Code ID setting	00-FF_{16} (ASCII)	00-FF_{16} <H>*
Insert group selection	00-66	00-66 00*
Reserved		

END

Matrix 2 of 5

Read:

Format

Data digits (variable)	Check digit (optional)

Check digit verification: The check digit is made as the sum module 10 of the numerical values of all data digits.

Check digit transmission: By setting Enable, check digit will be transmitted.

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

SETUP

Option bar code	Option	Alpha. entry
Read	Disable Enable	00 01*
Check digit verification	Disable Enable	00* 01
Check digit transmission	Disable Enable	00* 01
Max. code length	00-99	00-99 00*
Min. code length	00-99	00-99 06*
Code ID setting	$00\text{-}FF_{16}$ (ASCII)	$00\text{-}FF_{16}$ <X>*
Insert group selection	00-44	00-44 00*
Reserved		

END

Codabar

Read:

Format

Start	Data digits (variable)	Check digit (optional)	End

Check digit verification: The check digit is made as the sum module 16 of the numerical values of all data digits.

Check digit transmission: By setting Enable, check digit will be transmitted.

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Code ID setting: Refer to Code ID setting of UPC-A.

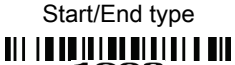
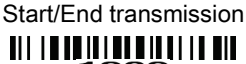
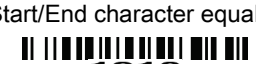
Insertion group selection: Refer to Insertion group selection of UPC-A.

Start/End type: Codabar has four pairs of Start/End pattern; you may select one pair to match your application.

Start/End transmission: Refer to Start/End transmission of Code 39.

Start/End character equality: By setting Enable, the start and end character of a Codabar barcode must be the same.

SETUP

Option bar code	Option	Alpha. entry
Read	Disable Enable	00 01*
Check digit verification	Disable Enable	00* 01
Check digit transmission	Disable Enable	00* 01
Max. code length	00-99	00-99 00*
Min. code length	00-99	00-99 00*
Code ID setting	00-FF_{16} (ASCII)	00-FF_{16} <N>*
Insert group selection	00-66	00-66 00*
Start/End type 	ABCD/ABCD abcd/abcd ABCD/TN*E abcd/tn*e	00* 01 02 03
Start/End transmission 	Disable Enable	00* 01
Start/End character equality 	Disable Enable	00* 01

END

Code 128

Read:

Format

Data digits (variable)	Check digit (optional)

Check digit verification: The check digit is made as the sum module 103 of all data digits.

Check digit transmission: By setting Enable, check digit will be transmitted.

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

Truncate leading zeros: The leading “0” digits of Code 128 barcode characters can be truncated when the feature is enabled.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 2001	Disable Enable	00 01*
Check digit verification 2002	Disable Enable	00 01*
Check digit transmission 2003	Disable Reserved	00* 01
Max. code length 2004	00-99	00-99 00*
Min. code length 2005	00-99	00-99 01*
Code ID setting 2006	00-FF_{16} (ASCII)	00-FF_{16} <K>*
Insert group selection 2007	00-66	00-66 00*
Truncate leading zeros 2008	Disable All leading “0”s Only the first “0”	00* 01 02

%%%END END

Code 93

Read:

Format

Data digits (variable)	2 check digits (optional)

Check digit verification: The check digit is made as the sum module 47 of the numerical values of all data digits.

Check digit transmission: By setting Enable, check digit will be transmitted.

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 2101	Disable Enable	00 01*
Check digit verification 2102	Disable Enable	00 01*
Check digit transmission 2103	Disable Enable	00* 01
Max. code length 2104	00-99	00-99 00*
Min. code length 2105	00-99	00-99 01*
Code ID setting 2106	00-FF_{16} (ASCII)	00-FF_{16} <L>*
Insert group selection 2107	00-66	00-66 00*
Reserved 2108		

%%%END END

Code 11

Read:

Format

Data digits (variable)	Check digit 1 (optional)	Check digit 2 (optional)

Check digit verification: The check digit is presented as the sum module 11 of all data digits.

Check digit transmission: By setting Enable, check digit 1 and check digit 2 will be transmitted upon your selected check digit verification method.

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

SETUP

Option bar code	Option	Alpha. entry
Read	Disable Enable	00 01*
Check digit verification	Disable One digit Reserved Reserved	00 01* 02 03
Check digit transmission	Disable Enable	00* 01
Max. code length	00-99	00-99 00*
Min. code length	00-99	00-99 00*
Code ID setting	00-FF_{16} (ASCII)	00-FF_{16} <V>*
Insert group selection	00-66	00-66 00*
Reserved		

END

MSI/Plessey

Read:

Format

Data digits (variable)	Check digit 1 (optional)	Check digit 2 (optional)

Check digit verification: The MSI/Plessey has one or two optional check digits. There are three methods of verifying check digits, i.e. Mod10, Mod10/10 and Mod 11/10. The check digit 1 and check digit 2 will be calculated as the sum module 10 or 11 of the data digits.

Check digit transmission: By setting Enable, check digit 1 and check digit 2 will be transmitted upon your selected check digit verification method.

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 2301	Disable Enable	00* 01
Check digit verification 2302	Disable 1 digit (mod 10) Reserved Reserved	00* 01 02 03
Check digit transmission 2303	Disable Enable	00* 01
Max. code length 2304	00-99	00-99 00*
Min. code length 2305	00-99	00-99 00*
Code ID setting 2306	$00\text{-}FF_{16}$ (ASCII)	$00\text{-}FF_{16}$ <O>*
Insert group selection 2307	00-66	00-66 00*
Reserved 2308		

%%%END END

UK/Plessey

Read:

Format

Data digits (variable)	2 check digits (optional)

Check digit verification: The UK/Plessey has one or two optional check digits. The check digit 1 and check digit 2 will be calculated as the sum module 10 or 11 of the data digits.

Check digit transmission: By setting Enable, check digit will be transmitted.

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

SETUP

Option bar code	Option	Alpha. entry
Read	Disable Enable	00* 01
Check digit verification	Disable Enable	00 01*
Check digit transmission	Disable Enable	00* 01
Max. code length	00-99	00-99 00*
Min. code length	00-99	00-99 01*
Code ID setting	$00\text{-}FF_{16}$ (ASCII)	$00\text{-}FF_{16}$ <U>*
Insert group selection	00-66	00-66 00*
Reserved		

END

UCC/EAN 128

Read:

Format

Data digits (variable)	Check digit (optional)

Check digit verification: The check digit is made as the sum module 103 of all data digits.

Check digit transmission: By setting Enable, check digit will be transmitted.

Max. /Min. code length: Refer to Max./Min. code length of Code 39.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

Truncate leading zeros: Refer to Truncate leading zeros of Code 128.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 2501	Disable Enable	00 01*
Check digit verification 2502	Disable Enable	00 01*
Check digit transmission 2503	Disable Reserved	00* 01
Max. code length 2504	00-99	00-99 00*
Min. code length 2505	00-99	00-99 01*
Code ID setting 2506	$00\text{-}FF_{16}$ (ASCII)	$00\text{-}FF_{16}$ <K>*
Insert group selection 2507	00-66	00-66 00*
Truncate leading zeros 2508	Disable All leading “0”s Only the first “0”	00* 01 02

%%%END END

China Post

Read:

Format

11 Data digits

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

SETUP

Option bar code	Option	Alpha. entry
Read	Disable Enable	00 01*
Reserved		
Reserved		
Reserved		
Reserved		
Code ID setting	$00\text{-}FF_{16}$ (ASCII)	$00\text{-}FF_{16}$ <T>*
Insert group selection	00-66	00-66 00*
Reserved		

END

GS1 DataBar (GS1 DataBar Truncated)

GS1 DataBar Truncated is structured and encoded the same as the standard GS1 DataBar format, except its height is reduced to a 13 modules minimum; while GS1 DataBar should have a height greater than or equal to 33 modules.

Read:

Format

16 Data digits

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

Conversion:

UCC/EAN 128- Refer to Code ID transmission of String transmission,]Cm will be identified as AIM ID.

UPC-A or EAN-13- Barcode beginning with a single zero as the first digit has the leading “010” stripped and the barcode reported as EAN-13. Barcode beginning with two or more zeros but not six zeros has the leading “0100” stripped and the barcode reported as UPC-A.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 2701	Disable Enable	00 01*
Code ID setting 2702	00-FF$_{16}$ (ASCII)	00-FF$_{16}$ <R >*
Insert group selection 2703	00-66	00-66 00*
Conversion 2704	None UCC/EAN 128 UPC-A or EAN-13	00* 01 02
Reserved 2705		

%%%%END END

Read:

Format

16 Data digits

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

Conversion: Refer to Conversion of GS1 DataBar (GS1 DataBar Truncated).

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 2801	Disable Enable	00 01*
Code ID setting 2802	00-FF$_{16}$ (ASCII)	00-FF$_{16}$ <R >*
Insert group selection 2803	00-66	00-66 00*
Conversion 2804	None UCC/EAN 128 UPC-A or EAN-13	00* 01 02
Reserved 2805		

%%%END END

GS1 DataBar Expanded

Read:

Format

Data characters (variable)

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

Conversion:

UCC/EAN 128- Refer to Code ID transmission of String transmission,]Cm will be identified as AIM ID.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 2901	Disable Enable	00 01*
Max. code length 2902	00-99	00-99 00*
Min. code length 2903	00-99	00-99 01*
Code ID setting 2904	00-FF_{16} (ASCII)	00-FF_{16} <R >*
Insert group selection 2905	00-66	00-66 00*
Conversion 2906	None UCC/EAN 128	00* 01
Reserved 2907		

%%%END END

PDF417 (HR2280 model only)

This decoder is only applied with a specified firmware.

The symbol size in the standard of PDF417 says, number of rows: 3 to 90, and number of columns: 1 to 30. This scanner can only decode PDF417 at rows from 3 to 40 and columns from 1 to 20.

The error correction level for a PDF417 symbol is from 0 to 8. This scanner can only support the levels from 0 to 6.

Read:

Format

Data characters (variable)

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 3001	Disable Enable	00* 01
Max. code length 3002	00-99	00-99 00*
Min. code length 3003	00-99	00-99 01*
Code ID setting 3004	00-FF_{16} (ASCII)	00-FF_{16} <P>*
Insert group selection 3005	00-66	00-66 00*
Reserved 3006		

%%%END END

China Finance (HR2280 model only)

Note: This type of barcode is not Omni-directionally decodable. The encodable character set includes numeric 0 to 9. Among the symbol of 0 to 9, 0 and 2, 4 and 9, 5 and 8, 6 and 7, have the symmetrical pattern; the pattern of 1 and 3 is symmetrical.

Read:

Format

10 Data digits

Max./Min. code length: Refer to Max./Min. code length of Code 39.

Check digit verification: The check digit is made as the sum module 10 of the numerical values of all data digits.

Leading character 5/6/7/8/9 converted to A/B/C/D/E: By setting, leading character 5/6/7/8/9 can be converted to A/B/C/D/E.

Leading character assignment: By setting, only the barcode with the assigned leading character can be output.

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 3201	Disable Enable	00 01*
Max. code length 3202	00-99	00-99 10*
Min. code length 3203	00-99	00-99 10*
Check digit verification 3204	Disable Reserved	00* 01
Leading character 5/6/7/8/9 converted to A/B/C/D/E 3205	Disable Enable Only 5 converted to A Only 6 converted to B Only 7 converted to C Only 8 converted to D Only 9 converted to E	00 01* 02 03 04 05 06
Leading character assignment 3206	Disable Assigned to 0 Assigned to 5(A) Assigned to 6(B) Assigned to 7(C) Assigned to 8(D) Assigned to 9(E) Assigned to 1 Assigned to 2 Assigned to 3 Assigned to 4	00 01* 02 03 04 05 06 07 08 09 10
Code ID setting 3207	$00\text{-}FF_{16}$ (ASCII)	$00\text{-}FF_{16}$ <Y>*
Insert group selection 3208	00-66	00-66 00*

%%%END END

%%LLDS

Laser Light Direction Setting: By scanning the barcode above, the decoding direction of the scanner's laser light is from left to righ t. By scanning the up-side-down barcode above, the decoding di rection of the scanner's laser light is from right to left.

QR Code (HR2280 model only)

Read:

Format

Data characters (variable)

Code ID setting: Refer to Code ID setting of UPC-A.

SETUP

Option bar code	Option	Alpha. entry
Read	Disable Enable	00 01*
Code ID setting	00-FF$_{16}$ (ASCII)	00-FF$_{16}$ <E>*
Reserved		

END

Aztec (HR2280 model only)

Read:

Format

Data characters (variable)

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

SETUP

Option bar code	Option	Alpha. entry
Read	Disable Enable	00 01*
Code ID setting	00-FF_{16} (ASCII)	00-FF_{16} <F>*
Reserved		

END

DataMatrix (HR2280 model only)

Read:

Format

Data characters (variable)

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Read 3501	Disable Enable	00 01*
Code ID setting 3504	00-FF_{16} (ASCII)	00-FF_{16} <W>*
Reserved 3506		

%%%END END

HanXin Code (HR2280 model only)

Read:

Format

Data characters (variable)

Code ID setting: Refer to Code ID setting of UPC-A.

Insertion group selection: Refer to Insertion group selection of UPC-A.

SETUP

Option bar code	Option	Alpha. entry
Read	Disable Enable	00 01*
Code ID setting	00-FF_{16} (ASCII)	00-FF_{16} < J >*
Reserved		

END

G1-G6 & FN1 substitution string setting

Format of barcode data transmission

Prefix	Code name	Preamble	Code ID	Code length	Code data	Code ID	Postamble	Suffix

Suffix string setting: The <enter > key is represented in different ASCII when it is applied by different OS. For a Windows/DOS OS, <enter> is represented as <CR><LF> (0x0D 0x0A); for an APPLE MAC OS, <enter> is represented as <CR> (0x0D); for a Linux/Unix OS, <enter> is represented as <LF> (0x0A).

Prefix/Suffix string setting: & **Preamble/Postamble string setting:**

They are appended to the data automatically when a barcode is decoded.

Example: Add a symbol of "$" as a prefix for all symbologies.

Steps:

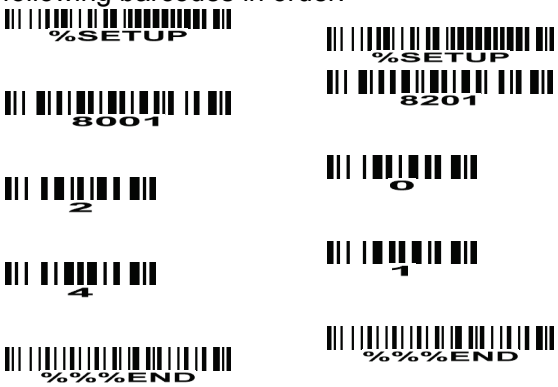
1) Scan SETUP and Prefix string setting barcode.

2) Use the ASCII table to find the value of $→24.

3) Scan 2 and 4 from the barcode on the foldout back page.

4) Scan END barcode.

Scanning steps: Scan the following barcodes in order.



Insert G1/G2/G3/G4 string setting: The scanner offers 4 positions and 4 character strings to insert among the symbol.

Example: Set G1 string to be "AB".

Original code data	"1 2 3 4 5 6"
Output code data	"1 2 A B 3 4 5 6"

Steps:

1) Scan SETUP and Insert G1 string setting barcode.

2) Use the ASCII table to find the value of A→41, B→42.

3) Scan 4, 1 and 4, 2 from the barcode on the foldout back page.

4) Scan END barcode.

5) Refer to the chapter of G1-G4 string position & Code ID position.

6) Refer to the chapter of Hand-held scan & some global settings.

Testing barcode:

123456

FN1 substitution string setting: The FN1 character (0x1D) in an UCC/EAN128 barcode, or a Code 128 barcode, or a GS1 DataBar barcode can be substituted with a defined string.

Truncate leading G5 string setting: By setting, a defined leading character or string can be truncated. Also a single character can be un-defined.

Repeat of a G5 character setting: While G5 is set as a single defined/un-defined character, G5 can also be set to be repeated. This setting is ignored when the truncate number is more than the barcode data characters. The option of "FF" for this setting is not active while the option of Truncate leading G5 string setting is "00".

Example: Truncate all leading zeros for all symbologies.

Original code data	"0001 2 3 4 5 6"
Output code data	"1 2 3 4 5 6"

Steps:

Testing barcode:

000123456

Truncate ending G6 string setting: By setting, a defined ending character or string can be truncated. Also a single character can be un-defined.

Repeat of a G6 character setting: While G5 is set as a single defined/un-defined character, G6 can also be set to be repeated. This setting is ignored when the truncate number is more than the barcode data characters. The option of "FF" for this setting is not active while the option of Truncate ending G6 string setting is "00".

%SETUP SETUP

Option bar code	Option	Alpha. entry
Prefix string setting 8001	0-22 characters None	00-FF$_{16}$ 00*
Suffix string setting 8002	0-22 characters <ENTER>	00-FF$_{16}$ 0A0D*
Preamble string setting 8003	0-22 characters None	00-FF$_{16}$ 00*
Postamble string setting 8004	0-22 characters None	00-FF$_{16}$ 00*
Insert G1 string setting 8005	0-22 characters None	00-FF$_{16}$ 00*
Insert G2 string setting 8006	0-22 characters None	00-FF$_{16}$ 00*
Insert G3 string setting 8007	0-22 characters None	00-FF$_{16}$ 00*
Insert G4 string setting 8008	0-22 characters None	00-FF$_{16}$ 00*
FN1 substitution string setting 8009	0-4 characters <SP>	00-FF$_{16}$ 20*
Truncate leading G5 string setting 8010	A un-defined character 1-22 defined characters <0>	00 01-7F$_{16}$ 30*
Repeat of a G5 character setting 8011	Once Defined times Un-defined times (All)	01* 01-22 FF
Truncate ending G6 string setting 8012	A un-defined character 1-22 defined characters <0>	00 01-7F$_{16}$ 30*
Repeat of a G6 character setting 8013	Once Defined times Un-defined times (All)	01* 01-22 FF

%%%END END

G1-G4 string position & Code ID position

Format of barcode data transmission

Prefix	Code name	Preamble	Code ID	Code length	Code data	Code ID	Postamble	Suffix

Insert G1/G2/G3/G4 string position: The scanner offers 4 positions to insert strings among the symbol. In case of the insertion position is greater than the length of the symbol, the insertion of string is not effective.

Code ID position: It is allowed to select different positions of code ID placement.

%SETUP SETUP

Option bar code	Option	Alpha. entry
Insert G1 string position 8101	00-99	00-99 00*
Insert G2 string position 8102	00-99	00-99 00*
Insert G3 string position 8103	00-99	00-99 00*
Insert G4 string position 8104	00-99	00-99 00*
Code ID position 8105	Before code data After code data	00* 01
Reserved 8106		
Reserved 8107		

%%%%END END

String transmission

Note: The information in this chapter is closely related to the chapter of String setting.

Format of barcode data transmission

Prefix	Code name	Preamble	Code ID	Code length	Code data	Code ID	Postamble	Suffix

Preamble transmission: By setting Enable, preamble will be appended before the data transmitted.

Postamble transmission: By setting Enable, postamble will be appended after the data is transmitted.

Code ID transmission: Code ID can be transmitted in the format of either Proprietary ID or AIM ID. Refer to the chapter of Default setting for each barcode.

Code length transmission: The length of code data string can be transmitted before the code data when Enable is selected. The length is represented by a number with two digits.

Code name transmission: By setting Enable, code name will be transmitted before code data.

Case conversion: The characters within code data or the whole output string can be set in either upper case or lower case.

FN1 substitution transmission: The scanner supports a FN1 substitution feature for keyboard wedge, USB and RS-232 interface. The replacement string of FN1 can be chosen by user (see chapter of G1-G6 & FN1 substitution string setting).

%SETUP SETUP

Option bar code	Option	Alpha. entry
Prefix transmission 8201	Disable Enable	00* 01
Suffix transmission 8202	Disable Enable	00 01*
Code name transmission 8203	Disable Enable	00* 01
Preamble transmission 8204	Disable Enable	00* 01
Postamble transmission 8205	Disable Enable	00* 01
Code ID transmission 8206	Disable Proprietary ID AIM ID	00* 01 02
Code length transmission 8207	Disable Enable	00* 01
Case conversion 8208	Disable Upper (data only) Lower (data only) Upper (whole string) Lower (whole string)	00* 01 02 03 04
FN1 substitution transmission 8209	Disable Keyboard wedge/USB RS-232 Keyboard wedge/USB/RS-232	00* 01 02 03
Reserved 8210		

%%%END END

UPC-A

UPC-E

EAN-8

EAN-13

Code 39

Code 32

Code 128

Interleaved 2 of 5

Industrial 2 of 5

Matrix 2 of 5

Code 93

UCC/EAN 128

Code 11

Test Chart (Continued)

MSI/Plessey

UK/Plessey

ISBN/ISSN

China Post

GS1 DataBar (GS1 DataBar Truncated)

GS1 DataBar Limited

GS1 DataBar Expanded

PDF417

01Az+-=

MicroPDF417

23+-mdo

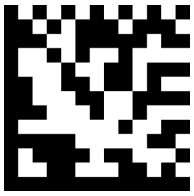
QR Code

0123456789

Aztec

01AZ[+-*/]za98

DataMatrix



0123456789

Hanxin Code

百度百科

Troubleshooting

Problem	Possible causes	Possible solutions
Nothing happens when you follow the operating instructions, or the scanner displays erratic behavior.	No power to the scanner.	Check the system power. Ensure the power supply is connected.
	Incorrect cables.	Use the original cables.
	Connections are loose.	Check for loose cable connections.
LEDs comes on, but the scanner does not decode.	Bar code symbol is unreadable.	Check the symbol to make sure it is not defaced. Try scanning test symbols of the same bar code type.
	Scanner is not programmed for the correct bar code type.	Be sure the scanner is programmed to read the type of bar code you are scanning.
	Distance between scanner and bar code is incorrect.	Move the scanner closer to or further from the bar code.
Scanned data is incorrectly displayed on the host.	Scanner is not programmed to work with the host. Check scanner host type parameters or editing options.	Be sure proper host is selected. For RS-232, ensure the scanner's communication parameters match the host's settings.
Other circumstances.		Contact your distributor or the manufactory support centre.

Maintenance

Cleaning the exit window is the only maintenance required. A dirty window may affect scanning accuracy.

1. Do not allow any abrasive material to touch the window.
2. Remove any dirt particles with a damp cloth.
3. Wipe the window using a tissue moistened with water.
4. Do not spray water or other cleaning liquids directly into the window.
5. Use a soft, dry cloth when cleaning the scanner.

ASCII table

H / L	for keyboard wedge		for RS-232	
	0	1	0	1
0	Null		NUL	DLE
1	Up	F1	SOH	DC1
2	Down	F2	STX	DC2
3	Left	F3	ETX	DC3
4	Right	F4	EOT	DC4
5	PgUp	F5	ENQ	NAK
6	PgDn	F6	ACK	SYN
7		F7	BEL	ETB
8	Bs	F8	BS	CAN
9	Tab	F9	HT	EM
A		F10	LF	SUB
B	Home	Esc	VT	ESC
C	End	F11	FF	FS
D	Enter	F12	CR	GS
E	Insert	Ctrl+	SO	RS
F	Delete	Alt+	SI	US

Notes: The 2nd and the 3rd columns above are used for keyboard wedge only.

H / L	2	3	4	5	6	7
0	SP	0	@	P	`	p
1	!	1	A	Q	a	q
2	“	2	B	R	b	r
3	#	3	C	S	c	s
4	$	4	D	T	d	t
5	%	5	E	U	e	u
6	&	6	F	V	f	v
7	‘	7	G	W	g	w
8	(	8	H	X	h	x
9	)	9	I	Y	i	y
A	*	:	J	Z	j	z
B	+	;	K	[	k	{
C	,	<	L	\	l	|
D	-	=	M	]	m	}
E	.	>	N	^	n	~
F	/	?	O	_	o	DEL

Example: ASCII “A” = “41”.

Return default parameters & version

%%%DEF

WARNING: Handheld unit default value initialization

If you wish to return the handheld unit to the entire factory default settings, scan the barcode above.

%%BDEF

WARNING: Cradle default value initialization[i]

If you wish to return the cradle to the entire factory default settings (radio communication setting is not included), scan the barcode above.

[i]Note: This setting is valid only when the cradle is in upgrade ready mode. Refer to chapter of RF 433 MHz communications setting for Cradle.

%%%VER

Handheld unit firmware version list

If you wish to display the firmware version of the handheld unit, scan the barcode above.

%%BVER

Cradle firmware version list

If you wish to display the firmware version of the cradle, scan the barcode above.

0
1
2
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